



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/630,337  | 07/30/2003  | Xiang Li             | O1056/20007         | 8751             |
| 3000  | 7590        | 10/20/2005           | EXAMINER            |                  |
| CAESAR, RIVISE, BERNSTEIN,<br>COHEN & POKOTILOW, LTD.<br>11TH FLOOR, SEVEN PENN CENTER<br>1635 MARKET STREET<br>PHILADELPHIA, PA 19103-2212 |             |                      | LEADER, WILLIAM T   |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 1742                |                  |
| DATE MAILED: 10/20/2005   |             |                      |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/630,337

Applicant(s)

LI ET AL

Examiner

William T. Leader

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 11-16 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/3/2003</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the filter material must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

2. Claim 4 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the

claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 4 recites that the filter plates have apertures through the plates for allowing water to pass through the plates. Figure 1 shows filter plates 38 and 40 as extending across the apparatus. If the plates do not contain apertures for allowing water to pass through the plates, the apparatus would be inoperable. Since apertures appear to be required, claim 4 does not further limit the structure of the apparatus of claim 3.

***Claim Rejections - 35 USC § 112***

3. Claims 2-4<sup>are</sup> rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As noted above, it appears that the filter plates recited in claims 2 and 3 must include apertures of some type to allow the water to flow through them. If the apertures are not required, as suggested by their recitation as an additional feature in claim 4, it is not apparent how the apparatus recited in claims 2 and 3 functions.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, 5-9, 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (6,190,528) in view of Eumann et al (4,601,808).

7. The Li et al patent is directed to electrodeionization apparatus. The apparatus includes an anion exchange membrane, a cation exchange membrane, a first electrode, a plurality of membrane bags formed by the ion exchange membranes, a second electrode, the membrane bags having a concentrate flow channel, a dilute flow channel located adjacent the membrane bags, the membrane bags and the dilute flow channels forming an inner module having a first end and a second end opposite the first end and a housing containing the components. See figures 1-3. The apparatus of Li et al additionally includes water distributing board 4 arranged at the first end of the inner module and water gathering board 11 arranged at the second end of the inner module. Feed water is supplied to the apparatus through inlet 3. Product water is removed from the apparatus through outlet 13. In order for the feed water to flow into the inner module for treatment, it must pass through water distributing board 4. In order for the product water to flow from the inner module after treatment to out 13 it must pass through water gathering board 12.

Thus boards 4 and 12 must have sufficient passages to allow water to flow through them. Boards 4 and 12 of Li et al are considered to correspond generally to the filter material recited in claim 1

8. Claim 1 differs from the apparatus of Li et al by reciting that the filter material inhibits resin from flowing through. It appears that boards 4 and 12 of Li et al would also perform this function. Otherwise, the resin which is filled between adjacent membrane bags would be lost during operation and the effectiveness of the apparatus would decline. The Eumann et al patent is directed to apparatus for desalting water by electrodialysis. The apparatus of Eumann et al includes resin particles in resin chambers 18. Water passes out of the chambers through nozzles 21 in partition 22. Eumann et al teach that the nozzles permit the passage of liquids in both directions and, at the same time, retain the resin particles in the resin chamber 18. Column 3, lines 22-25. The prior art of record is indicative of the level of skill of one of ordinary skill in the art. It would have been obvious at the time the invention was made to have provided openings in boards 4 and 12 of Li et al of a size that would retain the resin particles because it is recognized that the particles should be retained as shown by Eumann et al.

9. The features of claims 5-9 and 11-16 are taught by Li et al. See figures 1-3 and the corresponding description.

10. Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 1742

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William T. Leader whose telephone number is 571-272-1245. The examiner can normally be reached on Mondays-Thursdays and alternate Fridays, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WL  
William Leader  
September 28, 2005

ROY KING   
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700